

Claims

1. A communications network for exchanging data packets (P) of ATM connections, which is hierarchically constructed such that in a lowest network level (L1) a plurality of network nodes (A.1.1., ..., C.2) are provided and each are directly or indirectly connected by at least one possible physical path on the one hand to terminal devices and on the other hand to every other network node of this network level, that in higher network levels (L2, L3) network nodes (A.1, ..., A.4, ..., B.2; A, B, C) are provided which each are administratively responsible for a group (PGA1, ..., PGA4, ..., PGB2, PGA, PGB, PGC) of network nodes situated in an underlying network level, and that each network node (e.g. A.1) situated in a higher network level is physically connected to at least one network node (A.1.1) of the group for which it is responsible and is logically connected to every other network node (A.1.2, A.1.3) of this group (PGA1) and to every other network node (A.2, A.3, A.4) of the group to which it itself belongs, in which communications network each network node (e.g. A.1) of a higher network level is responsible for providing that each network node (A.1.1, A.1.2, A.1.3) of a lower network level for which it is responsible can when necessary use the connection data which it requires to determine the path information for the data packets of a concrete ATM connection in this communications network, and in which communications network a data bank (DB), in which connection data are kept available, is arranged in network nodes of a lower network level, **characterised in** that each data bank in a network node of a lower network level (L1) keeps available connection data for a closer environment (PGA1, ..., PGA4, ..., PGC), that at least one additional data bank (RSA1, ..., RSC), which keeps available

connection data for a wider environment, is provided and assigned to a network node, and that that network node of a higher network level (e.g. A.1) which is responsible for a network node (A.1.1) to which an additional data bank (RSA1) is assigned, also comprises means (Contr, RA) for maintaining the connection data in this additional data bank.

2. A method for making available connection data for determining path information (PI) for the data packets (P) of ATM connections in a communications network which is hierarchically constructed such that in a lowest network level (L1) a plurality of network nodes (A.1.1, ..., C.2) are provided and each are directly or indirectly connected by at least one possible physical path, on the one hand to terminal devices and on the other hand to every other network node of this network level, that in higher network levels (L2, L3) network nodes (A.1, ..., A.4, ..., B.2; A, B, C) are provided which each are administratively responsible for a group (PGA1, ..., PGA4, ..., PGB2, PGA, PGB, PGC) of network nodes situated in an underlying network level, and that each network node (e.g. A.1) situated in a higher network level is physically connected to at least one network node (A.1.1) of the group for which it is responsible and is logically connected to every other network node (A.1.2, A.1.3) of this group (PGA1) and to every other network node (A.2, A.3, A.4) of the group (PGA) to which it itself belongs, in which method each network node (e.g. A.1) of a higher network level is responsible for providing that each network node (A.1.1, A.1.2, A.1.3) of a lower network level for which it is responsible can when necessary use the connection data which it requires to determine the path information (PI) for the data packets (P) of a concrete ATM connection in this communications

network, and in which method in network nodes of a lower network level connection data are kept available in a data bank (DB), **characterised in** that each data bank (DB) in a network node of a lower network level keeps available
 5 connection data for a closer environment, that at least one additional data bank (RSA1, ..., RSC), which keeps available connection data for a wider environment, is accessible to and assigned to a network node, and that network node of a higher network level (A.1) which is
 10 responsible for a network node (A.1.1) to which an additional data bank (RSA1) is assigned, is also responsible for maintaining the connection data in this additional data bank.

15 ~~3.~~ A method for determining path information (PI) for the data packets (P) of ATM connections in a network node (e.g. A.1.2) of a communications network which is hierarchically constructed such that in a lowest network level (L1) a plurality of network nodes (A.1.1, ..., C.2) are provided
 20 and each are directly or indirectly connected by at least one possible physical path, on the one hand to terminal devices and on the other hand to every other network node of this network level, that in higher network levels (L2, L3) network nodes (A.1, ..., A.4, ..., B.2; A, B, C) are
 25 provided which each are administratively responsible for a group (PGA1, ..., PGA4, ..., PGB2, PGA, PGB, PGC) of network nodes situated in an underlying network level, and that each network node (e.g. A.1) situated in a higher network level is physically connected to at least one
 30 network node (A.1.1) of the group for which it is responsible and is logically connected to every other network node (A.1.2, A.1.3) of this group (PGA1) and to every other network node (A.2, A.3, A.4) of the group (PGA) to which it itself belongs, in which method, from this

network node belonging to a lower network level, connection data are called up from a data bank (DB) assigned to the network node, **characterised in** that the connection data which cannot be called up from the data bank (DB) assigned to the network node (A.1.2) are called up from an additional data bank (RSA1) which is assigned to another network node (A.1.1).

4. A Network node (A.1.2, ..., C.2) for a lower network level (L1) of a communications network which is hierarchically constructed such that in a lowest network level (L1) a plurality of network nodes (A.1.1, ..., C.2) are provided and each are directly or indirectly connected by at least one possible physical path, on the one hand to terminal devices and on other hand to every other network node of this network level, that in higher network levels (L2, L3) network nodes (A.1, ..., A.4, ..., B.2; A, B, C) are provided which each are administratively responsible for a group (PGA1, ..., PGA4, ..., PGB2, PGA, PGB, PGC) of network nodes situated in an underlying network level, and that each network node (e.g. A.1) situated in a higher network level is physically connected to at least one network node (A.1.1) of the group for which it is responsible and is logically connected to every other network node (A.1.2, A.1.3) of this group (PGA1) and to every other network node (A.2, A.3, A.4) of the group (PGA) to which it itself belongs, in which network node a data bank (DB) is provided in which connection data are kept available, **characterised in** that the data bank (DB) keeps available connection data for a closer environment and that the network node comprises interrogation means (RA) by which the connection data for a wider environment can be called up from an additional data bank (RSA1, ..., RSC) which is assigned to another network node.

5. A network node (A.1.1, ..., C.1) for a lower network level (L1) of a communications network which is hierarchically constructed such that in a lowest network level (L1) a plurality of network nodes (A.1.1, ..., C.2) are provided and each are directly or indirectly connected by at least one possible physical path, on the one hand to terminal devices and on the other hand to every other network node of this network level, that in higher network levels (L2, L3) network nodes (A.1, ..., A.4, ..., B.2; A, B, C) are provided which each are administratively responsible for a group (PGA1, ..., PGA4, ..., PGB2, PGA, PGB, PGC) of network nodes situated in an underlying network level, and that each network node (e.g. A.1) situated in a higher network level is physically connected to at least one network node (A.1.1) of the group for which it is responsible and is logically connected to every other network node (A.1.2, A.1.3) of this group (PGA1) and to every other network node (A.2, A.3, A.4) of the group (PGA) to which it itself belongs, in which network node a data bank (DB) is provided in which connection data are kept available, **characterised in** that an additional data bank (RSA1, ..., RSC), which keeps available connection data for a wider environment, is provided and is assigned to this network node or connected to the data bank (DB) provided in this network node, and that the network node comprises means (RA) whereby connection data from the additional data bank can be emitted to other network nodes upon request.
6. A Network node (A.1, ..., B.2; A, B, C) for a higher network level (L2, L3) of a communications network which is hierarchically constructed such that in a lowest network level (L1) a plurality of network nodes (A.1.1, ..., C.2) are provided and each are directly or indirectly connected

by at least one possible physical path, on the one hand to terminal devices and on the other hand to every other network node of this network level, that in higher network levels (L2, L3) network nodes (A.1, ..., A.4, ..., B.2; A, B, C) are provided which each are administratively responsible for a group (PGA1, ..., PGA4, ..., PGB2, PGA, PGB, PGC) of network nodes situated in an underlying network level, and that each network node (e.g. A.1) situated in a higher network level is physically connected to at least one network node (A.1.1) of the group for which it is responsible and is logically connected to every other network node (A.1.2, A.1.3) of this group (PGA1) and to every other network node (A.2, A.3, A.4) of the group (PGA) to which it itself belongs, **characterised in** that the network node comprises means (Contr, RA) for supporting the exchange of connection data between data banks (DB) in network nodes for which this network node is responsible and data banks (DB) in other network nodes for maintaining the respective stored data.

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7. A communications network according to Claim 1, characterised in that the lower network level whose network nodes each are provided with a data bank in which connection data for a closer environment are kept available is the lowest network level (L1).

8. A communications network according to Claim 7, characterised in that the closer environment is the region of that group (e.g. PGA1) to which the respective network node (A.1.1, ..., A.1.3) belongs.

9. A communications network according to Claim 8, characterised in that at least one additional data bank (RSA1, ..., RSC) is provided in each group of the lowest

network level (L1).

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